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Fay Sharpe LLP 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115			EXAMINER BIRBACH, NAOMI L	
			ART UNIT	PAPER NUMBER
			1792	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/574,188	<b>Applicant(s)</b> CROWTHER ET AL.	
	<b>Examiner</b> NAOMI BIRBACH	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 6 objected to because of the following informalities: Claim 6 recites “the ratio....is at least 10 and is less than 200” but should preferably recite “is at least 10:1 and is less than 200:1” to reflect a ratio. Appropriate correction is required.
2. Claim 25 is objected to because of the following informalities: Claim 25 recites “A method according to **any** claim 19...” Apparently, -A method according to claim 19...- should be indicated. Appropriate correction is required.
3. Claim 33 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. Claim 33 recites “in any” instead of –in any one of-. See MPEP § 608.01(n). Further, it is not clear whether claim 33 is independent, since the metes and bounds of claim 33 are not readily ascertainable and it has antecedency problems under 35 U.S.C. 112, second paragraph. Accordingly, the claim has not been further treated on the merits.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 30 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. Claim 30 recites the limitation "further water" in line 3. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 34 recites the limitation "first polymeric material and/or second and or/third polymeric materials" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 3, 5, 6, 8, 9, 13, 14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,788,781 to Van Slyke as evidenced by 5,215,596 to Van Slyke (herein Van Slyke '596).

13. As to claim 1, Van Slyke discloses a method of cleaning a contaminated material which comprises a solid material, such as drill cuttings, that is contaminated with oil (Col. 1, lines 14-19). As evidenced by Van Slyke '596 (which is incorporated by reference), the residual oil on drill cuttings contains hydrocarbons (Col 8, lines 63-68; Col. 9, lines 4-7). The method comprises contacting the contaminated material with a cleaning solution comprising a surface active agent to form a first mixture including the contaminant and surfactant (Col. 11, lines 4-9). Then, the first mixture is contacted with an aqueous fluid (i.e. carrier formulation) to form a second mixture wherein the carrier reacts with the surfactant to emulsify the contaminant, thereby creating a water external emulsion (Col. 11, lines 30-35). Then, the solid material is separated from the other

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components of the second mixture (Col. 12, lines 5-10). Van Slyke teaches that the solid material is clean, so it is understood to have a lower level of hydrocarbon compared to the contaminated material in step (A) (Col. 12, lines 9-11).

14. As to claim 3, Van Slyke further discloses that the method may be used to clean a material contaminated with petroleum (Col. 3, lines 51-55).

15. As to claim 5, Van Slyke further discloses in Table D a cleaning example where the residual oil on the cleaned material is 5.6 wt%. It is therefore inherent that the contaminated material had at least 5 wt% oil before being cleaned.

16. As to claim 6, Van Slyke further discloses in Examples 60-61 that 100 grams of contaminated material is selected and contacted with 20 grams of cleaning composition prepared in Example 55, which contains a total of 11.6 wt% of surfactant, which would be 2.23 grams of surfactant (Col. 23, lines 1-54, Tables B and C). Therefore, the ratio of the wt% of the mass (98%) to the wt% of the surfactant (2.3%) is about 43, which anticipates applicant's claimed range.

17. As to claim 8, Van Slyke further discloses that the surfactant includes a hydrophilic moiety (Col. 2, lines 55-60).

18. As to claim 9, Van Slyke further discloses that the surfactant may be anionic (Table A).

19. As to claim 13, Van Slyke further discloses that the carrier formulation that is contacted with the first mixture in step (B), which is water, is arranged to interact with the surfactant (Col. 11, lines 20-40). Since Van Slyke teaches that the surfactant

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contains a hydrophilic moiety (Col. 2, lines 55-60), this hydrophilic moiety interacts with the water carrier.

20. As to claim 14, Van Slyke further discloses that the carrier comprises water, which is by nature a polar molecule (Col. 11, lines 20-40).

21. As to claim 18, Van Slyke further discloses that the carrier formulation is an aqueous fluid such a fluid consisting entirely of water (Col. 11, lines 20-22; Col. 12, lines 5-10).

22. Claim 35 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USPN 4,599,117 to Luxemburg.

23. Luxemburg discloses drill cuttings that are cleaned with polyvinyl alcohol (Col. 1, 14-19; Col. 5, lines 5-8). It is inherent that these drill cuttings retain at least a trace of polyvinyl alcohol. In the alternative, it would have been obvious to one of ordinary skill in the art at the time of the invention that the drill cuttings cleaned with polyvinyl alcohol as taught by Luxemburg would retain a trace of polyvinyl alcohol.

### ***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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25. Claims 2, 4 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,788,781 to Van Slyke as evidenced by 5,215,596 to Van Slyke (herein Van Slyke '596).

26. Van Slyke is relied upon as discussed above with respect to the rejection of claim 1.

27. As to claim 2, Van Slyke further discloses that the contaminated material comprises drill cuttings which are contaminated with oil, so it would be obvious to one of ordinary skill that that the drill cuttings were produced when drilling for oil (Col. 11, lines 51-54).

28. As to claim 4, Van Slyke further discloses that the cleaned drill cuttings are capable of passing the sheen test and can be disposed into in ocean (Col. 12, lines 8-10). As evidenced by Van Slyke '596 evidenced that the United States requires cuttings discharged to the sea to be "non-sheening", which corresponds to a hydrocarbon residue on the cuttings of less than 10% by weight of the cuttings (Col. 8, lines 63-68). Therefore, it would be obvious to one of ordinary skill in the art that the contaminated material comprises more than 10 wt% fluidic hydrocarbon, which is at least 5wt%.

29. As to claim 10, Van Slyke further discloses that the surfactant is wholly soluble in the oil contaminating the substrate (Col. 11, lines 1-8). Since Van Slyke does not specify a temperature at which to perform the method, it would be obvious to one of ordinary skill that the cleaning is conducted at room temperature, which is about 25 °C.

30. As to claim 11, Van Slyke further discloses that the cleaned drill cuttings are capable of passing the sheen test and can be disposed into in ocean (Col. 12, lines 8-

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10). As evidenced by Van Slyke '596, the United States requires cuttings discharged to the sea to be “non-sheening”, which corresponds to a hydrocarbon residue on the cuttings of less than 10% by weight of the cuttings (Col. 8, lines 63-68). Therefore, it would be obvious to one of ordinary skill in the art that the contaminated material comprises in step (A) which has not yet be cleaned has more than 10 wt% of hydrocarbon and that the remainder of the contaminated material comprises drill cuttings, so would comprises less than 90 wt%.

31. As to claim 12, Van Slyke further discloses that 100 grams of contaminated material (100 pbw) is selected and contacted with 20 grams cleaning composition prepared in Example 55, which contains a total of 11.6% surfactant, which is equal to 2.32 grams surfactant (2.32 pbw, which is less than 5 pbw surfactant) and no water (Col. 23, lines 1-54, Tables B and C). These components comprise the first mixture. Van Slyke further discloses that the cleaned drill cuttings are capable of passing the sheen test and can be disposed into in ocean (Col. 12, lines 8-10). As evidenced by Van Slyke '596 evidenced that the United States requires cuttings discharged to the sea to be “non-sheening”, which corresponds to a hydrocarbon residue on the cuttings of less than 10% by weight of the cuttings (Col. 8, lines 63-68). Therefore, it would be obvious to one of ordinary skill in the art that the contaminated material which has not yet be cleaned has more than 10 wt% of hydrocarbon (10 pbw).

32. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,788,781 to Van Slyke as evidenced by 5,215,596 to Van Slyke (herein Van Slyke

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'596) as applied to claim 1 above, and further in view of USPN 4,645,608 to Rayborn as evidenced by USPN 4,137,044 to Flower.

33. Van Slyke is relied upon as discussed above with respect to the rejection of claim 1.

34. As to claim 7, Van Slyke further discloses that the surfactant includes a lipophilic (hydrophobic) moiety (Col. 7, lines 29-40). Van Slyke does not expressly disclose that the surfactant has an aromatic ring system.

35. Rayborn discloses treating oil contaminated cuttings with a surfactant such as phenol ethoxylates or alkylphenol ethoxylates (Col. 2, lines 44-53), which by nature have aromatic rings. Flower teaches that alkylphenol ethoxylate surfactants are lipophilic (hydrophobic) (Col. 1, lines 50-53).

36. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Van Slyke to include a hydrophobic surfactant with an aromatic ring system as taught by Rayborn since it is known to successfully remove oil contaminated cuttings. The selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination (MPEP 2144.07)

37. Claims 17, 28-32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,788,781 to Van Slyke as evidenced by 5,215,596 to Van Slyke (herein Van Slyke '596) as applied to claim 1 above, and further in view of USPN 4,599,117 to Luxemburg.

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38. Van Slyke is relied upon as discussed above with respect to the rejection of claim 1.

39. As to claims 17 and 34, Van Slyke discloses that the carrier is aqueous (Col. 11, lines 20-22), but does not expressly disclose that the carrier comprises a first polymeric material which incorporates a polyvinyl alcohol moiety.

40. Luxemburg discloses a method of cleaning oil contaminated solids, such as drill cuttings (Col. 1, lines 11-17), where the solids are immersed in an aqueous solution comprising a polymer (Col. 4, lines 47-51), where the polymer is polyvinyl alcohol (Col. 5, lines 5-7).

41. It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the aqueous carrier in the method taught by Van Slyke with a polymeric material incorporating polyvinyl alcohol as taught by Luxemburg as the carrier to yield predictable results of enhancing the removal of oil from the contaminated material (MPEP 2143 B).

42. As to claim 28, Van Slyke further discloses transporting the second mixture through a centrifugal separator, which would mix the components to effect intimate contact (Col. 12, lines 5-10). Luxemburg also discloses mixing the mixture (Col. 5, lines 48-51).

43. As to claim 29, Van Slyke further discloses that the solid material is allowed to settle during step © (Col. 12, lines 1-20).

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44. As to claim 30, Van Slyke further discloses rinsing the substrate with aqueous fluid (i.e. water) after creating the mixture of step (B) but before step (C) (Col. 11, lines 31-42).

45. As to claim 31, Van Slyke further discloses a step (D) after step (C), which comprises separating the components which remain in the second mixture from one another (Col. 12, lines 12-22).

46. As to claim 32, Van Slyke further discloses that in step (D), the contaminant oils removed from the drill cuttings rise to the top of the separator to form an oil phase, which is deemed to be a precipitate, while the carrier rinse water as well as the surfactant form an aqueous phase below (Col. 12, lines 12-25). Since the oil precipitates out of the carrier, it is understood that the carrier forms a precipitate.

47. Claims 15, 16, and 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,788,781 to Van Slyke as evidenced by 5,215,596 to Van Slyke (herein Van Slyke '596) as applied to claim 1 above, and further in view of USPA 2002/0128374 to Eagland et al.

48. Van Slyke is relied upon as discussed above with respect to the rejection of claim 1.

49. As to claims 15 and 16, Van Slyke discloses using an aqueous fluid as a carrier formulation to create a water external emulsion to remove the oil from the contaminated material (Col. 11, lines 30-35). Van Slyke does not expressly disclose that the carrier is

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a first polymeric material which includes a multiplicity of cationic moieties and hydroxyl groups pendant from a polymeric chain.

50. Eagland discloses a polymeric material which includes a multiplicity of cationic moieties and hydroxyl groups pendant from a polymeric chain (Page 4, Paragraphs [0070]-[0073], Compound II). Eagland teaches that the reaction mixture can be contacted with oil to emulsify and isolate the oil (Page 3, Paragraph [0039]).

51. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Van Slyke to include the polymeric material taught by Eagland since Eagland teaches that the polymeric material can be contacted with oil to emulsify the oil (Page 3, Paragraph [0039]). One of ordinary skill in the art would have been motivated to substitute the aqueous carrier in the method taught by Van Slyke with the polymeric material as taught by Eagland as the carrier to yield predictable results of enhancing the removal of oil from the contaminated material (MPEP 2143 B).

52. As to claims 19-27, Eagland discloses a method of preparing a formulation, which is applicant's first polymeric material, comprising a first polymeric compound (which is applicant's third polymeric material) and a second polymeric material which are caused to react by exposure to UV lights which results in a photochemical reaction between double bonds to form a polymer chain, which is cross-linking, to create a first polymeric material (Page 2, Paragraphs [0028]; [0035]; Page 4, Paragraph [0070]-[0073]). Eagland teaches both third polymeric materials as described in (i) and (ii), where  $n$  is an integer (Page 1, Paragraphs [0004], [0005], [0014]; Page 2, Paragraph

[0026], [0027]). The second polymeric material comprises a functional group which is able to react in the presence of applicant's third polymeric material to form the first polymeric material (Page 2, Paragraph [0029]). Edwards further discloses that the polymeric materials are caused to react to form the formulation before contacting oil (contaminated material), which would be prior to step (B) (Page 2, Paragraph [0035]; Page 3, Paragraph [0039]). The ratio of the wt% of the first polymeric material (which is applicant's third polymeric material) to the wt% of the second polymeric material selected for the preparation of the formulation (which is applicant's first polymeric material) is in the range of 0.01 to 100, which encompasses applicant's claimed range (Page 2, Paragraph [0031]). Edwards further discloses that A and B represents are independently selected from optionally-substituted aromatic and heteroaromatic groups (Page 1, Paragraph [0013]) and that R1 and R2 are independently selected from a hydrogen atom or an optionally substituted alkyl group (Page 1, Paragraph [0006]). Further, the second polymeric material is selected from optionally substituted polyvinyl alcohol polyvinyl acetate and polyalkylene glycols (Page 2, Paragraph [0029]), meaning that it includes a vinyl alcohol or vinyl acetate copolymer. Eagland teaches that the reaction mixture can be contacted with oil to emulsify and isolate the oil (Page 3, Paragraph [0039]).

53. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Van Slyke to include the polymeric material taught by Eagland since Eagland teaches that the reaction mixture can be contacted with oil to emulsify the oil (Page 3, Paragraph [0039]). One of ordinary skill in the art

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would have been motivated to substitute the aqueous carrier in the method taught by Van Slyke with the polymeric material as taught by Eagland as the carrier to yield predictable results of enhancing the removal of oil from the contaminated material (MPEP 2143 B).

### ***Conclusion***

54. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAOMI BIRBACH whose telephone number is (571)270-7367. The examiner can normally be reached on Monday-Friday, 8:00am-5:30pm.

55. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on 571-272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

56. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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/N. B./

Naomi Birbach

Examiner, Art Unit 1792

5/11/2009

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1792